

AN INVITATION couched in graceful terms and written in the French language has been extended by the Imperial Society of Horticulture of St. Petersburg to all botanists, to attend an international Congress of Botanists and Horticulturists in that city upon the 5th (17th) of May. We learn from the circular that the official language of the congress will be French, but any one is free to express himself in his national tongue. The papers will be limited to 30 minutes. The distinguished committee who issue the call offer to facilitate the journey of every botanist by advice; and to make his stay in the capital agreeable. It is to be hoped that the United States will be represented.

### CURRENT LITERATURE.

*The Bacteria.* By T. J. Barrill, Ph. D. From the eleventh report of the Illinois Industrial University. 8 vo. 65 pp., Springfield, 1892. —No subject connected with botany now commands more general interest, while requiring the highest technical knowledge and skill, than that of the bacteria. The present brochure of sixty-five closely packed pages is a timely contribution. It is specially to be commended as an entertaining and concise *resumé* of the subject, both for the general reader only interested to know what bacteria are and how they affect domestic and commercial matters, and for the specialist who wishes the latest information. Dr. Sternberg's translation of Magnin's work is the only other treatise of the kind in the English language. The low price at which the present equally valuable work is issued (50 cts.) ought to ensure a wide perusal. The more serviceable part for the possessor of a good microscope is the systematic portion, filling half the pamphlet. This consists of keys to the genera, and descriptions of genera and species, with notes and synonymy. It is largely a conscientious translation of that part of the first number of Winter's edition of Rabenhorst's *Kryptogamen-Flora von Deutschland, Oesterreich, und der Schweiz* pertaining to bacteria (*Schizomycetes*) and to the closely related yeast plants (*Saccharomycetes*). This brings the most valuable classification with descriptions yet published within the reach of those unfamiliar with the German language. The author interpolates in brackets quite a number of doubtful or unsettled species mostly by Hallier, descriptions of three new species, and names for the species causing hog cholera and chicken cholera.

*The Colors of Flowers*, as Illustrated by the British Flora; by Grant Allen. (Nature Series, Macmillan & Co., London.)—

This little book deserves well its place in the popular "Nature Series" for it presents a theory in explanation of the coloring of flowers, which seems at first reading extremely plausible *a priori* and apparently so well borne out by the facts that one is almost tempted to accept it without examining closely the foundations on which it rests or the facts to which it appeals for support. The author's first task is to prove that, contrary to the commonly accepted doctrine of morphology, "petals are in all probability enlarged and flattened stamens, which have been set apart for the special work of attracting insects." As a corollary of this proposition it is stated that "as the stamens of almost all flowers \* \* \* are yellow, it would seem naturally to follow that the earliest petals would be yellow too," and as "the earliest and simplest types of existing flowers are almost always yellow, seldom white and never blue, this in itself would be sufficient ground for believing that yellow was the orig-

inal color of all petals." The proofs relied upon by Professor Allen to sustain this position are chiefly three. First: the earliest flowers, i. e., those of the Gymnosperms, consisted only of naked ovules and clusters of stamens. Inasmuch therefore as sepals and petals are a later development than stamens and carpels, they cannot be said to show a transition between green leaves and the latter, as held by the Wolfian hypothesis. Second: stamens show a tendency to become petaloid, as shown by such flowers as *Nymphæa*, the *Mesembryanthemums*, orchids and others. Third: the occasional reversion of petals to stamens as in *Monarda* and *Capsella*.

Assuming the truth of the proposition that the original petals were yellow, the second and largest part of the book is devoted to showing the successive stages in the color-development of flowers, viz: (1) yellow, (2) white, (3) red or purple, (4) lilac, mauve, violet or blue. Examples from many families are adduced to show that the most specialized flowers of a single color are blue and the least so are yellow. Variegated flowers are still more highly developed, the ground-color being usually some one of the higher series while the spots or lines are of one or more of the lower colors. The occurrence of yellow or white petals in conjunction with a high degree of specialization in other organs is accounted for by retrogression. "Flowers which have reached a given stage in the progressive scale of coloration often show a tendency to fall back to a lower stage." Green flowers (except in Gymnosperms) are explained to be the degenerate descendants of more gaily colored ancestors. Anemophilous green Angiosperms must therefore be considered as the development of flowers.

I have said that Professor Allen's hypothesis was plausible. It is more. Because of the pleasant style of the writer and the easy explanation he offers of those facts which he cites, it is fairly enticing. But there are some things in flower coloration and teratology "hard to be understood" on this theory. Some of Professor Allen's arguments if closely scrutinized, bear in themselves marks of weakness and others are so strained that they have almost passed their "elastic limit." It is hard to believe that amentaceous trees which appeared in the Cretaceous were a later development than the *Magnolia*, *Liriodendron* and Maple, with which, as far as Paleontology shows, they were contemporaneous. Further, if the *Gramineæ* and *Cyperaceæ* are degenerate descendants of some petaliferous liliaceous plant, it is strange that no traces of these ancestral forms were preserved, whereas in the upper Eocene beds are found fossil species of *Arundo*, *Carex*, *Cyperus* and *Poacites*. The objection that such ancestral forms as Professor Allen's theory needs did not grow in places where they would likely be preserved cannot be urged because the *Alismaceæ* (some form of which he thinks was the primordial lily) affect the same stations as the *Cyperaceæ*.

The fact that stamens tend to become petaloid, instead of helping the hypothesis that petals are flattened stamens seems rather to militate against it. That there is a constant tendency to reversion no one who believes in the doctrines of morphology will deny. It is certainly more reasonable to suppose that stamens are reverting to an ancestral form when they become petaloid, as they do in numberless instances, than to suppose that petals are reverting when in a *very few* cases they become antheriferous.

Again, upon the theory advanced how can the origin of sepals be accounted for? Were the primal sepals yellow or blue? or have they *degenerated* to a green color? Can anyone believe that when sepals and bracts become petaloid they are reverting to an *older* form.

While we cannot accept as reasonable the theory advanced for the

reasons stated above and because we doubt very much whether the facts if fully known would bear out some of the fundamental statements of the author, yet the book before us is certainly a most entertaining contribution to evolutionary botany and well worth a careful reading. (For additional criticism, see Dr. A. Gray, in *Am. Jour. Sci.*, Mar., p. 236.)

## ARTICLES IN JOURNALS.

- ASCHERSON, P.—Review of C. and W. Barbey's "Botanizing in the Levant," *Bot. Zeit.* Feb. 16; Review of the 5th volume of Boissier's "Flora Orientalis," l. c. Mar. 9.
- ASKENASY.—Review of Berthold's "Distribution of Algae in the Gulf of Nepal, etc.," *Bot. Zeit.* Feb. 16.
- BAKER, J. G.—A Synopsis of the genus *Selaginella* (containing descriptions of 8 new species), continued, *Jour. Bot.* 21. p. 80.
- BEAL, W. J.—The movements of Roots of Indian Corn in Germination, *Am. Nat.* 17. 4. p. 412.
- BENNETT, ARTHUR—Two new Potamogetons (with plate), *Jour. Bot.* 21. p. 65.
- BRITTEN, JAMES—A review of Sir J. D. Hooker's "Flora of British India," part 9, *Jour. Bot.* 21. p. 88.
- BUCHENAU, FR.—Review of "Alex Brann's Life as drawn from his writings," by G. Reimer, *Bot. Zeit.* Mar. 16.
- CHEESEMAN, E. L.—An Alga in an Aquarium (with note by the editor), *Am. Mo. Mic. Jour.* 4. p. 41.
- COOKE, M. C.—On *Sphaerella* and its allies, *Jour. Bot.* 21. p. 67.
- EATON, D. C.—New or little-known Ferns of the U. S. No. 13. (in which is a description of a new *Neoholana* from California.) *Torr. Bull.* 10. 3. p. 26.
- FARLOW, W. G.—Notice of Rabenhorst's Kryptogamen-Flora. vol. II, parts 1-3, *Am. Jour. Sci.* 3. 25. p. 314; Notice of C. B. Plowright's "Heterocism of Ureines," l. c.
- FAYOD, V.—Contributions to the knowledge of the lower Myxomycetes, 1 Plate, *Bot. Zeit.* Mar. 16.
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- GEYLER.—Notice of A. Schenk's paper upon *Medulosa elegans*, *Bot. Zeit.* Feb. 23; notice of J. Felix's paper upon the petrified woods of Frankenberg in Saxony, l. c.; notice of Ferd. v. Muir's "New Vegetable Fossils of Victoria," l. c. Mar. 16.
- GOODALE, G. L.—Notice of T. H. W. Englemann on "Color and assimilation," *Am. Jour. Sci.* 3. 25. p. 312; Notice of E. Stahl "on the influence of Sunny and Shaded Localities on the Development of Foliage Leaves," l. c. p. 313; Notice of Meehan on "Freezing of liquids in living vegetable tissue," *Science*, 1. 8. Note 507.
- GRAY, ASA, and J. H. TRUMBULL.—Review of De Candolle's Origin of Cultivated Plants; with Annotations upon certain American Species, *Am. Jour. Sci.* 3. 25. p. 211.
- HITCHCOCK, R.—The Reticulate Structure of Living Matter (an excellent criticism of the "Bioplason" theory), *Am. Mo. Mic. Jour.* 4. p. 48; Plants in Water at High Temperature, l. c. p. 57.
- KALCHERENNER, C.—Communication on Mycology, *Flora*, Feb. 21.
- KOEHNE, E.—Review of DeCandolle's "Origin of Cultivated Plants," *Bot. Zeit.* Mar. 2.
- KRAUS, Dr. Carl.—Inquiries upon the sap-pressure in plants, 3d paper, *Flora*, Feb. 21.
- KUTSCHER, Emil.—Upon the function of tannic acid in metastasis, concluded, *Flora*, Feb. 11.
- MAGNUS, P.—Notice of the report of the work of M. Gayon upon the physiology of *Fuji* gi, *Bot. Zeit.* Feb. 23.
- MALAN, Edward.—The Common Orchis (*O. mascula*), with cuts, *Sci. Gossip*, No. 219. p. 52.
- MERRIFIELD, MR. MARY P.—Cryptogamic Flora of Germany, Australia and Switzerland, *Nature*, 27. p. 385.
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- NYLANDER, W.—New European Lichens, *Flora*, Mar. 1.
- PARRY, C. C.—A new species of *Oxytheca*, *Torr. Bull.* 10. 2. p. 23.
- SCHIMPER, F. W.—Upon the Development of chlorophyll grains and coloring bodies, *Bot. Zeit.* Feb. 16, continued Feb. 23, March 2, concluded March 9; with plates.
- SCHUBNER, F. LAMSON.—A list of Grasses collected by Mr. Pringle in Arizona and California (in which are descriptions of 2 new species, *Aridiplachne* and *Apoa*), *Torr. Bull.* 10. 3. p. 29.
- SPENCER, JAMES—Recreations in Fossil Botany (*Lyginodendron Oldhamium*), with cuts, *Sci. Gossip* No. 219. p. 59.
- TRUMBULL, J. H.—See under "GRAY" above.
- TUCKERMAN, EDWARD.—New Western Lichens (4 new species and one new genus, *Pyrenothamnia* by name), *Torr. Bull.* 10. 2. p. 21.
- VASEY, GEO.—New Species of Grasses (2 species of *Agrostis* from the Pacific coast), *Torr. Bull.* 10. 2. p. 21; On three Hybrid Oaks near Washington, D. C. (with three plates), l. c. 10. 3. p. 25.
- WOLLE, FRANCIS.—Fresh-Water Algae (with plate), *Torr. Bull.* 10. 2. p. 13.